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## Short presentation

My research has focused on understanding the development of different inflammatory skin diseases including psoriasis, atopic dermatitis (AD), and vitiligo, and the role of keratinocytes and microRNAs in this. The prevalence of inflammatory skin diseases is increasing therefore it is crucial to understand how these diseases develop and what cells and molecular pathways are involved in this. In greater detail, I have mainly worked on projects focusing on the role of miRNAs in psoriasis and AD and how miRNAs regulate the immune responses and proliferation of keratinocytes. In my previous work leading to three first-author publications, I demonstrated that miR-146a/b and miR-10a inhibit inflammation and proliferation of keratinocytes by regulating the activity of the NF- $\kappa$ B pathway. In recent years my interest has shifted to the role of T cells in inflammatory skin diseases as I have always found the field of immunology and the role of T cells in immunological responses fascinating. My current work focuses on different epidermal T-cell subsets in response to different contact allergens however this is in line with my main research interest which is microRNAs in the development of skin diseases, however now I intend to determine their role in tissue-resident memory cells in the context of allergic contact dermatitis.

## Qualifications

Medicine, PhD, University of Tartu  
31 Aug 2015 → 19 Nov 2020  
Award Date: 19 Nov 2020  
Biomedicine, MSc (cum laude), University of Tartu  
2 Sep 2013 → 17 Jun 2015  
Award Date: 17 Jun 2015  
Genetechnology, BSc, University of Tartu  
30 Aug 2010 → 17 Jun 2013  
Award Date: 17 Jun 2013

## Employment

### External Postdoc

Skin Immunology Research Center  
København N.  
1 Jan 2022 → nu

### Postdoc

Skin Immunology Research Center  
København N.  
1 Jul 2023 → nu

### Postdoctoral Researcher

University of Tartu  
Tartu, Estonia  
1 Jan 2021 → 31 Dec 2021

### Co-lecturer for molecular biology practical course for medical students

University of Tartu  
Tartu, Estonia  
1 Sep 2018 → 31 Dec 2021

## **Specialist for the Clinical Research Centre**

Tartu University Hospital

Tartu, Estonia

1 Feb 2018 → 30 Sep 2020

## **Junior Research Fellow in Biomedicine and Translational Medicine**

University of Tartu

Tartu, Estonia

1 Sep 2017 → 31 Aug 2019

## **Research outputs**

### **Metabolic re-programming of keratinocytes in response to contact allergens**

Menzel, Mandy, Mraz, Veronika, Vaher, Helen, Geisler, Carsten & Bonefeld, Charlotte Menne, 2024, In: *Contact Dermatitis*. 90, 3, p. 235-244

### **Subclinical immune responses to nickel in sensitized individuals—a dose–response study**

Wennervaldt, M., Vaher, Helen, Ahlström, M. G., Bischofberger, N., Menné, T., Thyssen, Jacob Pontoppidan, Johansen, Jeanne Duus & Bonefeld, Charlotte Menne, 2024, (Accepted/In press) In: *Contact Dermatitis*.

### **Skin Colonization with *S. aureus* Can Lead to Increased NLRP1 Inflammasome Activation in Patients with Atopic Dermatitis**

Vaher, Helen, Kingo, K., Kolberg, P., Pook, M., Raam, L., Laanesoo, A., Remm, A., Tenson, T., Alasoo, K., Mrowietz, U., Weidinger, S., Kingo, K. & Rebane, A., 2023, In: *Journal of Investigative Dermatology*.

### **The junctional adhesion molecule-like protein (JAML) is important for the inflammatory response during contact hypersensitivity**

Mraz, Veronika, Lohmann, R. K. D., Menzel, Mandy, Hawkes, A., Vaher, Helen, Funch, Anders Boutrup, Jee, Mia Hamilton, Gadsbøll, A. S. Ø., Weber, Julie Friis, Yeung, Kelvin, Ødum, Niels, Woetmann, Anders, McKay, D., Witherden, D., Geisler, Carsten & Bonefeld, Charlotte Menne, 2023, In: *Contact Dermatitis*. 89, 5, p. e63-e65

### **miRNA expression profiles of the perilesional skin of atopic dermatitis and psoriasis patients are highly similar**

Carreras-Badosa, G., Maslovskaja, J., Vaher, Helen, Pajusaar, L., Annilo, T., Lättekivi, F., Hübenthal, M., Rodriguez, E., Weidinger, S., Kingo, K. & Rebane, A., 2022, In: *Scientific Reports*. 12, 22645.

### **Impact of AHR ligand TCDD on human embryonic stem cells and early differentiation**

Teino, I., Matvere, A., Pook, M., Varik, I., Pajusaar, L., Uudeküll, K., Vaher, Helen, Trei, A., Kristjuhan, A., Org, T. & Maimets, T., 2020, In: *International Journal of Molecular Sciences*. 21, 23, p. 1-24 24 p., 9052.

### **NickFect type of cell-penetrating peptides present enhanced efficiency for microRNA-146a delivery into dendritic cells and during skin inflammation**

Carreras-Badosa, G., Maslovskaja, J., Periyasamy, K., Urgard, E., Padari, K., Vaher, Helen, Tserel, L., Gustin, M., Kisand, K., Arukuusk, P., Lou, C., Langel, Ü., Wengel, J., Pooga, M. & Rebane, A., 2020, In: *Biomaterials*. 262, 120316.

### **SERPINB2 and miR-146a/b are coordinately regulated and act in the suppression of psoriasis-associated inflammatory responses in keratinocytes**

Vaher, Helen, Kivihall, A., Runnel, T., Raam, L., Prans, E., Maslovskaja, J., Abram, K., Kaldvee, B., Mrowietz, U., Weidinger, S., Kingo, K. & Rebane, A., 2020, In: *Experimental Dermatology*. 29, 1, p. 51-60 10 p.

### **miR-10a-5p is increased in atopic dermatitis and has capacity to inhibit keratinocyte proliferation**

Vaher, Helen, Runnel, T., Urgard, E., Aab, A., Carreras Badosa, G., Maslovskaja, J., Abram, K., Raam, L., Kaldvee, B., Annilo, T., Tkaczyk, E. R., Maimets, T., Akdis, C. A., Kingo, K. & Rebane, A., 2019, In: *Allergy: European Journal of Allergy and Clinical Immunology*. 74, 11, p. 2146-2156 11 p.

#### **Lymphoid stress surveillance response contributes to vitiligo pathogenesis**

Raam, L., Kaleviste, E., Šunina, M., Vaher, Helen, Saare, M., Prans, E., Pihlap, M., Abram, K., Karelson, M., Peterson, P., Rebane, A., Kisand, K. & Kingo, K., 2018, In: *Frontiers in Immunology*. 9, NOV, 2707.

#### **Signs of innate immune activation and premature immunosenescence in psoriasis patients**

Šahmatova, L., Sūgis, E., Šunina, M., Vaher, Helen, Prans, E., Pihlap, M., Abram, K., Rebane, A., Peterson, H., Peterson, P., Kingo, K. & Kisand, K., 2017, In: *Scientific Reports*. 7, 1, 7553.

#### **miR-146b Probably Assists miRNA-146a in the Suppression of Keratinocyte Proliferation and Inflammatory Responses in Psoriasis**

Hermann, H., Runnel, T., Aab, A., Baurecht, H., Rodriguez, E., Magilnick, N., Urgard, E., Šahmatova, L., Prans, E., Maslovskaja, J., Abram, K., Karelson, M., Kaldvee, B., Reemann, P., Haljasorg, U., Rückert, B., Wawrzyniak, P., Weichenthal, M., Mrowietz, U., Franke, A. & 13 others, Gieger, C., Barker, J., Trembath, R., Tsoi, L. C., Elder, J. T., Tkaczyk, E. R., Kisand, K., Peterson, P., Kingo, K., Boldin, M., Weidinger, S., Akdis, C. A. & Rebane, A., 2017, In: *Journal of Investigative Dermatology*. 137, 9, p. 1945-1954 10 p.

#### **MicroRNA-155 is dysregulated in the skin of patients with vitiligo and inhibits melanogenesis-associated genes in melanocytes and keratinocytes**

Šahmatova, L., Tankov, S., Prans, E., Aab, A., Vaher, Helen, Reemann, P., Pihlap, M., Karelson, M., Abram, K., Kisand, K., Kingo, K. & Rebane, A., Sep 2016, In: *Acta Dermato-Venereologica*. 96, 6, p. 742-747 6 p.

#### **MicroRNA-146a alleviates chronic skin inflammation in atopic dermatitis through suppression of innate immune responses in keratinocytes**

Rebane, A., Runnel, T., Aab, A., Maslovskaja, J., Rückert, B., Zimmermann, M., Plaas, M., Kärner, J., Treis, A., Pihlap, M., Haljasorg, U., Vaher, Helen, Nagy, N., Kemeny, L., Erm, T., Kingo, K., Li, M., Boldin, M. P. & Akdis, C. A., 1 Oct 2014, In: *Journal of Allergy and Clinical Immunology*. 134, 4, p. 836-847.e11

## **Prizes**

#### **Estonian Research Council postdoctoral research grant**

Vaher, Helen (Recipient), 2021

#### **Marie Skłodowska-Curie Postdoctoral Fellowship**

Vaher, Helen (Recipient), 2022

#### **The European Academy of Dermatology and Venereology Research Fellowship grant**

Vaher, Helen (Recipient), 2021